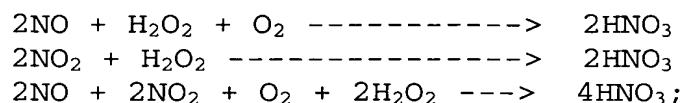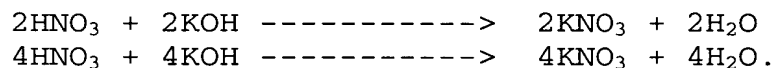# CONVERSION OF LOW NO$_x$ CONCENTRATIONS IN COMBUSTION GASES TO NITRIC ACID OR FERTILIZER USING HYDROGEN PEROXIDE AND LYE

ABSTRACT OF THE DISCLOSURE

A process for reducing NO$_x$ emissions in a gaseous combustion effluent stream containing NO and/or NO$_2$ includes the steps of: a) adding hydrogen peroxide to the effluent stream in sufficient amounts to generate nitric acid by first stage reactions as follows:

$$2NO + H_2O_2 + O_2 \longrightarrow 2HNO_3$$
$$2NO_2 + H_2O_2 \longrightarrow 2HNO_3$$
$$2NO + 2NO_2 + O_2 + 2H_2O_2 \longrightarrow 4HNO_3;$$

and optionally, after the nitric acid is generated, adding sufficient amounts of potassium hydroxide to the effluent stream to generate potassium nitrate in second stage reactions as follows:

$$2HNO_3 + 2KOH \longrightarrow 2KNO_3 + 2H_2O$$
$$4HNO_3 + 4KOH \longrightarrow 4KNO_3 + 4H_2O.$$